

PATENT CLAIMS

1. Water-dilutable binders containing reaction products ABC of epoxy resins A, compounds B having such functional groups as a result of which they are capable of reacting with compounds with epoxy groups, selected from compounds B1 with at least one primary or secondary amino group, compounds B2 with acid groups and compounds B3 with phenolic hydroxyl groups, and fatty acid amides C with at least one amide group and at least one amino group obtained by reacting fatty acids C1 and amines C2 with at least one secondary and at least one primary amino group.

10 2. The water-dilutable binders according to claim 1 characterised in that the fatty acid amides C contain at least two amide groups and at least one secondary amino group.

15 3. The water-dilutable binders according to claim 1 characterised in that the fatty acids C1 have 6 to 40 carbon atoms and at least one olefinic double bond.

4. The water-dilutable binders according to claim 1 characterised in that the amine C2 are linear, branched or cyclic aliphatic amines with 4 to 20 carbon atoms and at least one primary and at least one secondary amino group selected from the group consisting of amines C21 with a primary amino group and a secondary amino group and amines C22 with at least two primary amino groups.

20 5. The water-dilutable binders according to claim 1 characterised in that aliphatic or aromatic epoxy compounds with at least one epoxy group per molecule are used as compounds A, the monoepoxides A1 being selected from the group consisting of glycidyl ethers of aliphatic monohydric alcohols with 4 to 40 carbon atoms and glycidyl esters of aliphatic monocarboxylic acids with 5 to 20 carbon atoms and the diepoxides A2 are selected from the group consisting of glycidyl ethers of dihydric aliphatic alcohols with 4 to 20 carbon atoms, diglycidyl ethers of dihydroxy polyoxyalkylenes such as polyethylene glycol and polypropylene glycol, diglycidyl esters of dicarboxylic acids with 2 to 40 carbon atoms, and diglycidyl ethers of divalent phenols.

6. The water-dilutable binders according to claim 1 characterised in that, in the compounds **B1**, the amino groups are bound to aliphatic carbon atoms, that the compounds **B1** are linear, branched or cyclic and have 2 to 40 carbon atoms, wherein compounds **B1** are selected from the group consisting of compounds **B11** which, apart from at least one secondary or primary amino group, have at least one hydroxyl group, compounds **B12** which have at least one primary and at least one tertiary amino group, and compounds **B13** which have at least two primary amino groups and at least one secondary amino group.

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7. The water-dilutable binders according to claim 1 characterised in that the compounds **B2** are aliphatic linear, branched or cyclic monocarboxylic acids with 2 to 40 carbon atoms having at least one olefinic double bond.

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8. The water-dilutable binders according to claim 1 characterised in that the compounds **B3** are selected from the group consisting of monophenols and diphenols.

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9. A process for the preparation of water-dilutable binders according to claim 1 characterised in that

- in the first step, fatty acid amides **C** are synthesised by reacting the fatty acids **C1** with the amines **C2**, which fatty acid amides **C** have at least one secondary and/or primary amino group,
- these amino-functional acid amides **C** are subsequently mixed, in the second step, with at least two of the compounds **B**, where compounds **B** from at least two different classes of **B1**, **B2** and **B3** are used,
- subsequently, in step three, a first portion of an epoxide **A** is added and reacted until no more free epoxy groups are detectable,
- subsequently, this reaction product is dispersed in water to which a neutralising agent had previously been added and the dispersion formed is reacted in the fourth step with a further portion of a diepoxide **A2** and reacted further until all epoxy groups are completely consumed.

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10. The process according to claim 9 characterised in that, following the third step, at least one further compound **B** and a second portion of an epoxide **A** are added and the reaction mixture is reacted until no more free epoxy groups are detectable.

5 11. The process according to claim 10 characterised in that the epoxide added as second portion is a diepoxide **A2**.

12. A method of use of the water-dilutable binders according to claim 1 comprising coating metals, mineral substrates, plastics, paper and board.

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13. A method of use of the water-dilutable binders according to claim 1 comprising combining the binders of claim 1 with hardeners selected from the group consisting of blocked and non-blocked multifunctional isocyanates and aminoplast resins to formulate coatings.

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